

**REMARKS**

Claims 25-32 and 34-50 remain in the application. In this reply, claims 25 and 42 have been amended. Reconsideration and allowance of the claims in light of the amendments and arguments herein are respectfully requested.

**Formality Rejection of the Claims**

Claim 42 has been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. It is believed that the amendments made to claim 42 obviate this rejection.

**Prior Art Rejection of the Claims**

Claims 25-28, 30-32, 34-37, 39, 41-44, 47, 49, and 50 have been rejected under 35 U.S.C. § 102 as being anticipated by *Hsu et al.* (US 6,555,467).

Claims 29, 38, 40, 45, 46, and 48 (all dependent claims), respectively, have been rejected under 35 U.S.C. § 103 as being obvious over *Hsu et al.* in view of various secondary references.

**Allowance of Claims**

No recited or disclosed subject matter has been held or indicated in the Office Action to be allowable subject-matter.

**Reply to the Prior Art Rejection**

The rejections and the comments in the Office Action have been carefully considered. Applicant disagrees with the Examiner's statements in item 82 of page 10 of the Final Office Action that "the claim does not limit the location of the passivation layer to on top of the non-decomposable material, Therefore passivation located on the side of the non-decomposable material satisfies the claim", and "[a]s the applicant notes, page 11 line 14 of the remarks, *on* can refer to material located adjacent the side of the non-decomposable material". The cited portion of Applicant's remarks indicates that the claim language that the covering layer is positioned "on" the layer containing decomposable material and non-decomposable material, when read in conjunction with

the language that the passivation layer is "between" the non-decomposable material and the covering layer, make it clear that the passivation layer must be on top of the non-decomposable material, and not on the side of the non-decomposable material. It is difficult for Applicant to see how a covering layer located "on" the layer having both the decomposable and non-decomposable material can reasonably be read as indicating that the covering layer is on the side of the non-decomposable material (which, in any event, is not shown in *Hsu et al.*). As conventionally understood by those of ordinary skill in the art of semiconductor fabrication, if a first layer is "positioned on" (claim 25) or "formed on" (claim 42) a second layer, the first layer is on top of the second layer.

Further, the layer that was indicated to be "on" another layer was the covering layer – not the passivation layer (which is the layer that Examiner refers to as being on the side of the non-decomposable material). The passivation layer is indicated in the claims as being "between" the non-decomposable material and the covering layer.

Although Applicant believes that the rejection gives the terms of the claims a highly unusual and contrived reading, Applicant has nonetheless amended the claims to make them even more clear with respect to the position of the passivation layer, in order to advance prosecution.

#### **Anticipation by *Hsu et al.***

Before discussing the applied reference *Hsu et al.* in detail, it is believed that a brief review of the recited subject-matter would be helpful.

Claim 25 (similarly claim 42) now recites, *inter alia*:

an electrically conductive passivation layer **substantially covering an upper surface of the structure of non-decomposable material**; and

a covering layer positioned on the layer including the first subregion and second subregion, **the covering layer substantially covering an upper surface of the electrically conductive passivation layer**;

(Emphasis added.)

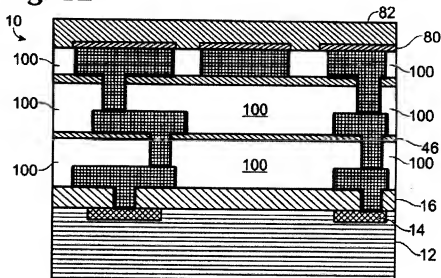
The amendments to claims 25 and 42 find support in the specification, for example, at paragraphs [0060] and [0061] of the published version, which disclose that a cobalt-tungsten-phosphorus passivation layer is deposited on (i.e., formed on an upper surface of) the copper surface, after which a polybenzoxazole precursor is applied to the layer sequence (i.e., to the top of the layer sequence), and dried, forming a dielectric covering layer.

It is believed that these amendments do not raise any issues that will require further search or consideration, since they simply clarify the location of the passivation layer in a manner consistent with the Applicant's previous arguments. Applicant therefore respectfully requests that the amendments be entered after the final rejection.

Applicant hopes that the amendments to claims 25 and 42 have finally made it absolutely clear that the passivation layer is formed on top of the non-decomposable material, and between the non-decomposable material and the covering layer, and *not* on the side of the non-decomposable material, as shown in *Hsu et al.*

As can be seen from FIG. 12 of *Hsu et al.*, reproduced below, the "barrier metal" (bold black lines, not labelled in FIG. 12, see reference labels 40 and 70 in FIGS. 7 and 10 of *Hsu et al.*), which is cited by the Examiner as being the same as the passivation layer in the claims of the present application, does *not* substantially cover an upper surface of the structure of non-decomposable material (also not labelled in FIG. 12, see reference labels 42 and 72 in FIGS. 7 and 10), and the covering layer (cited as 82 by the Examiner) does not substantially cover an upper surface of the passivation layer, as now recited in claims 25 and 42.

Fig. 12



Note that if the "passivation layer" in *Hsu et al.* is taken to be the capping layer 80, which (unlike the barrier metal 40 or 70) actually does substantially cover an upper surface of the non-decomposable material, and has an upper surface that is covered by the "covering layer" 82, the limitations of the claims would still not be met. The capping layer 80 is described in *Hsu et al.* as being composed of silicon nitride or boron nitride, and is therefore an insulating material, and cannot be an "**electrically conductive** passivation layer" (emphasis added), as recited in claims 25 and 42.

Further, it is unclear from *Hsu et al.* that the portion of the "barrier metal" 40 or 70, cited by the Examiner as being a "passivation layer" can actually serve as a passivation layer. In particular, the portion of the barrier metal formed on the side of the non-decomposable material in *Hsu et al.* abuts an air gap 100 (see Fig. 12). There would be no need to passivate a surface of a copper structure (as described in *Hsu et al.*) that abuts an air gap. Therefore, at least this portion of the barrier metal would not seem to serve as a "passivation layer".

For at least the reasons discussed above, it is believed that claims 25 and 42 are not

Response and Amendment After Final

anticipated by *Hsu et al.* Independent claims 25 and 42 are therefore believed to be novel. Because claims 26-41 in the present application ultimately depend from claim 25, and claims 43-50 ultimately dependent from claim 42, they are believed to be novel for at least the same reasons.

**Rejections under 35 U.S.C. § 103(a)**

Claims 29, 38, 40, 45, 46, and 48 (all dependent claims), respectively, have been rejected under 35 U.S.C. § 103 as being obvious over *Hsu et al.* in view of various secondary references. Since none of the cited references cure the deficiencies of *Hsu et al.* discussed above, claims 29, 38, 40, 46, and 48 are not rendered obvious by the cited combinations for at least the same reasons.

**Conclusion**

Therefore, in view of the above remarks, we respectfully submit that this application is in condition for allowance and such action is earnestly requested.

If for any reason the Examiner is not able to allow the application, she is requested to contact the Applicants' undersigned attorney at (312) 321-4200.

Respectfully submitted,



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